

# Notice of Allowability

Application No.

09/687,238

Examiner

Jean B Corielus

Applicant(s)

NAGUIB ET AL.

Art Unit

2637

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/14/05.
2. ☒ The allowed claim(s) is/are 1 and 2.
3. ☒ The drawings filed on 22 February 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).


\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 10-27-03
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

  
Jean B Corielus  
Primary Examiner  
Art Unit: 2637

4-25-05

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Henry Brenzel on 4/25/05.

The application has been amended as follows:

#### IN THE CLAIMS:

Claims 1 and 2 have been amended as follow:

1. **(Amended)** A method executed in a receiver that combines a decoder with an equalizer in a single module, comprising the steps of:  
said receiver receiving at time  $k$  a signal  $r(k)$ ;  
selecting [a trellis transition corresponding to symbol  $s$ ] as a signal transmitted by a transmitter a signal that minimizes the following equation metric

$$\xi_j(k) = \left| r(k) - \sum_{l=L_1+1}^{L_1} \tilde{h}_j(l) \tilde{s}(k-l) - \sum_{l=L_1+1}^{L+1} \tilde{h}_j(l) \hat{s}(k-l) \right|^2$$

where  $\tilde{h}_j(l)$  is related to both the transmission channel and to the encoding structure in [a] said transmitter,  $\tilde{s}(k)$  is a trial symbol specified by a selected trellis transition and  $\hat{s}(k)$  is a symbol that was previously decided; and

applying said [symbol  $s$ ] selected signal to said decoder to decode received symbols [to subsequent circuitry of said receiver].

2. **(Amended)** The method of claim 1 [where the were] said signal is selected [selecting of a trellis transition is chosen] to improve performance of equalization.

IN THE ABSTRACT:

The abstract has been replaced by the attached sheet.

IN THE SPECIFICATION:

Page 7, line 16, "is" has been replaced by --it--.

**Reasons for allowance**

2. The following is an examiner's statement of reasons for allowance: a method for processing a received signal is disclosed. The closest prior art Chennakeshu Sandeep et al, US Patent No. 5,467,374, discloses similar method. However, Chennakeshu Sandeep et al does not teach or fairly suggest the limitations of "selecting as a signal transmitted by a transmitter a signal that minimizes the following equation metric

$$\xi_j(k) = \left| r(k) - \sum_{l=L_1+1}^{L_1} \tilde{h}_j(l) \tilde{s}(k-l) - \sum_{l=L_1+1}^{L+1} \tilde{h}_j(l) \hat{s}(k-l) \right|^2$$


where  $\tilde{h}_j(l)$  is related to both the transmission channel and to the encoding structure in said transmitter,  $\tilde{s}(k)$  is a trial symbol specified by a selected trellis transition and  $\hat{s}(k)$  is a symbol that was previously decided; and applying said selected signal to said decoder to decode received symbols" are neither anticipated nor rendered obvious by art Chennakeshu Sandeep et al.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B Corrielus whose telephone number is 571-272-3020. The examiner can normally be reached on Maxi-Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-3086. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jean B Corrielus  
Primary Examiner  
Art Unit 2637 4-29-05

### Abstract of the disclosure

A method executed in a receiver that combines a decoder with an equalizer in a single module, comprising receiving at time  $k$  a signal  $r(k)$  in the receiver. Selecting as a signal transmitted by a transmitter a signal that minimizes the following equation metric

$$\xi_j(k) = \left| r(k) - \sum_{l=L_1+1}^{L_1} \tilde{h}_j(l) \tilde{s}(k-l) - \sum_{l=L_1+1}^{L+1} \tilde{h}_j(l) \hat{s}(k-l) \right|^2$$

where  $\tilde{h}_j(l)$  is related to both the transmission channel and to the encoding structure in the transmitter,  $\tilde{s}(k)$  is a trial symbol specified by a selected trellis transition and  $\hat{s}(k)$  is a symbol that was previously decided. Applying the selected signal to the decoder to decode received symbols.